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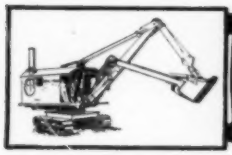
The EXCAVATING ENGINEER

Vol. XV No. 9 SEPTEMBER, 1921



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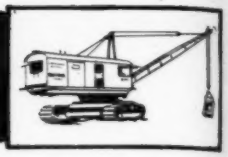

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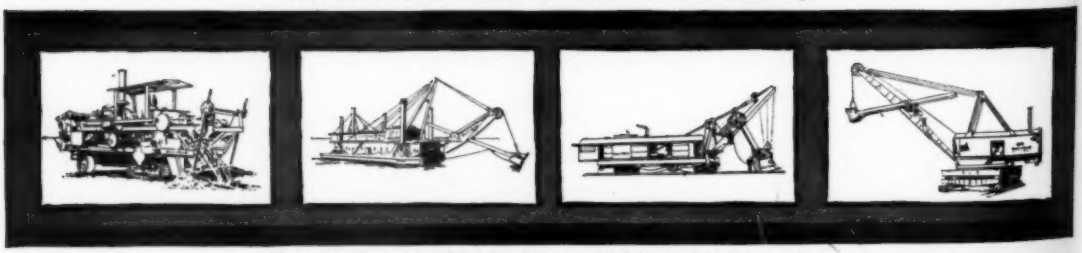

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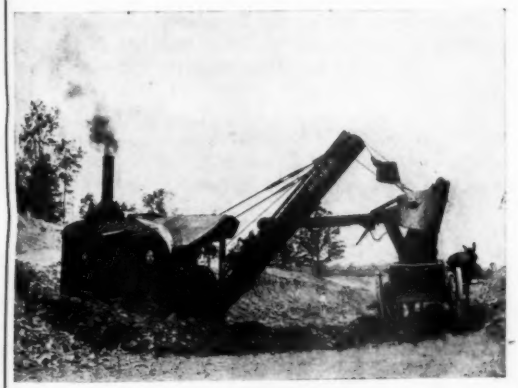

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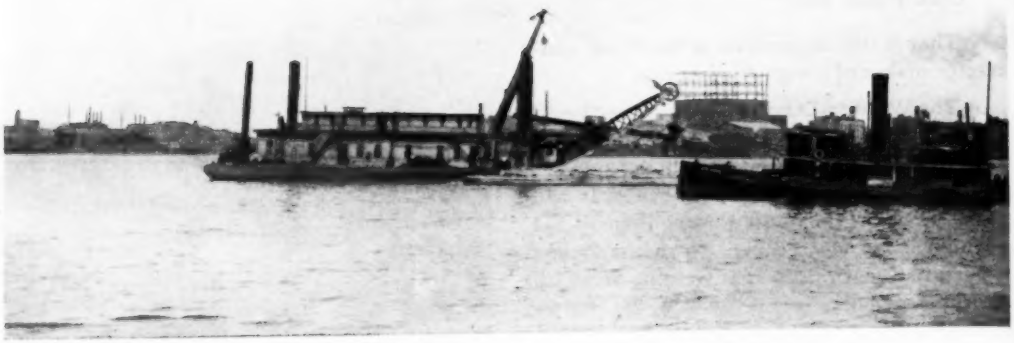
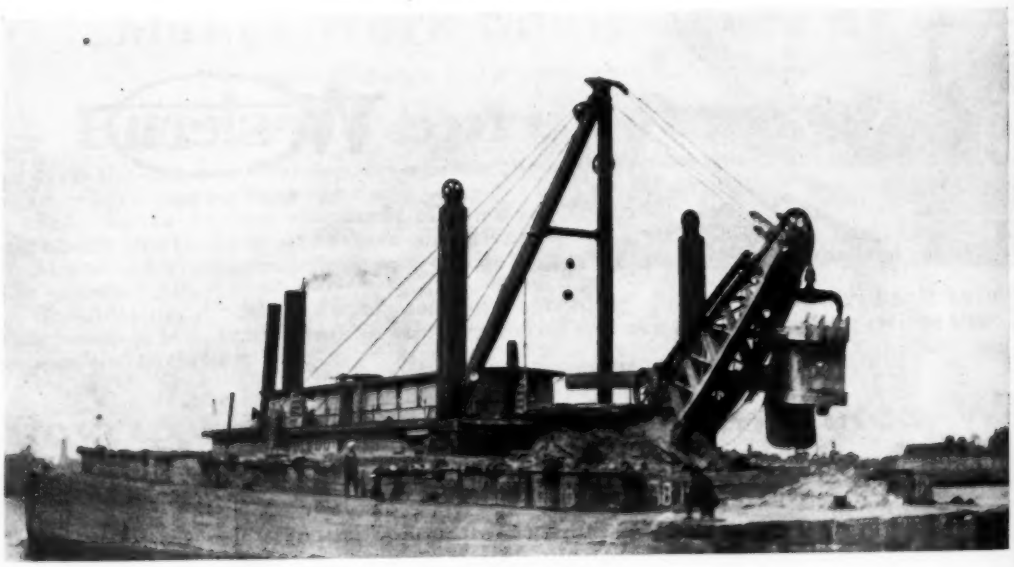


George H. Breymann & Brothers 15-Yard Bucyrus Dipper Dredge "Toledo" Excavating Shell Reef in the East River, New York.



The "Toledo" Loading Scow in the East River, New York.

The Excavating Engineer

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Dredging "Shell Reef," East River, New York

George H. Breymann & Brothers 15-Yard Dipper Dredge is Digging 3,000 Cubic Yards of Unblasted Rock, Hardpan and Boulders in Two 8-Hour Shifts — Description of Scow Operation

GEORGE H. BREYMANN & BROTHERS, the veteran marine and harbor contractors of Boston and New York are at present engaged in an interesting job of dredging what is known as "Shell Reef" in the East River, New York. This contract was awarded by the Government to Breymann & Brothers at three million dollars.

Shell Reef extends into mid-stream in the East River at a point about opposite 35th Street to a point opposite 4th Street. The material being excavated consists of rock, hardpan, sticky clay and large boulders. Some of the latter are from 15 to 18 yards in volume. All of the material is being removed by the dredge without blasting.

Dipper Dredge Operation

The work is being done by the Bucyrus dipper dredge "Toledo," one of the best known dipper dredges on the Atlantic Coast. This dredge is now in its twelfth year of steady operation on Government work, having started its career in Boston Harbor in 1909. The Toledo is equipped with 16″ and 28″ x 24″ tandem compound engines and is designed to dig to a depth of 50 feet. It carries dippers from 10 to 17 cubic yards capacity, depending upon the character of the material handled.

In spite of the heavy character of the material, which is unblasted, the Toledo is digging about 3000 cu. yds. a day in two 8-hr. shifts. The material is loaded alongside of the dredge into scows of 1500 cu. yds. capacity. The dredging is done about 27 ft. below mean low tide level. Due to the excessively heavy current and the 7-ft. rise in the tide, coupled with the bad cross currents and rips, it is necessary to move the dredge several times a day in order to stay on the spot under which the digging is being done. For this job the dredge was first equipped with a 17-yard dipper but they found that better results could be obtained with a 15-yard dipper, with which the dredge is now equipped.

Mr. James H. Morrow, the Efficient Superintendent for George H. Breymann & Brothers on the Dredge "Toledo"

The material excavated is so hard that the dipper teeth have to be renewed frequently.

Operation of the Scows

An interesting feature of the scows is the manner of drawing up drop doors in the bottom. This is done when the scow is brought alongside the dredge for a new load.

Mr. J. H. Morrow, Superintendent for Breymann Bros. developed this arrangement which is a great improvement over the old method.

A drum is mounted on each of the three winding shafts to each of which is attached a length of wire

rope passing through an eye on the combing of the scow. The rope lies on the deck while the doors are up. When the load is dropped the rope automatically winds on the drums being guided by the eye on the combing. After the scow is brought back and tied up alongside the dredge the end of the wire rope is drawn out of the eye and passed through a single sheave block, the block being hooked in the eye on the combing. A line is passed from the tug and made fast to a loop in the free end of the wire rope. The tug then backs away from the scow and the doors are pulled up; the whole operation taking less than three minutes for each two compartments, or nine minutes for the entire scow. By the old hand operation it took three hours to close the doors on one scow.

The tug "Kate Jones" keeps the dredge going by spotting the scows for loading.

Besides Mr. Morrow, the crew consists of the operators Lew Warren "Capt." Kay, two cranemen, engineer, cook and the usual number of deckhands and helpers.

Among the recent successful operations of the "Toledo" was the dredging at New Bedford, Boston Harbor, and in the Kill von Kull off Staten Island, New York.

At Broad Sound, Boston Harbor, work was encountered which was considered almost impossible for a dipper dredge. It called for the removal of about 300,000 yards of hardpan for a distance of about 300 feet long and 800 feet wide on both sides of a bulkhead. Needless to say this work was completed successfully.

The Kill von Kull operation was the removal of a ledge which was excavated without blasting, the material removed amounting to about 100,000 yards of rock.

Besides the "Toledo" Geo. H. Breymann and Bros. also own and operate the Bucyrus Dredges "Boston" and "General Poe," both of which went into commission nearly 25 years ago.

Dumping a Load

It may be of interest to note that Mr. Breymann's first dredge was put into service in the year 1890 at Toledo, It was a 14½ x 16, 4½ yard Bucyrus. In the years '92 and '93 two others were put into operation on Lake Erie, a 16 x 18 and a 16 x 16. These three dredges, known as Nos. 1, 2 and 3, are at present in the Company's yards at Toledo, in good serviceable condition, ready for use on any suitable contract they may secure.

Mr. Eugene Breymann is in charge of the coast work for his company and through his courtesy and co-operation it was possible to obtain the data of this article.

An Early Revolving Excavator and the Development of the Drag Bucket

Old timers as well as the present generation of earth-moving men are interested in the early history of the tools they use. We publish herewith a description of what is said to be the first revolving excavator, together with an account of the early development of the dragline bucket.

JOHN M. WALTON of Rock Island, Illinois, one of the old school dragline and shovel operators has sent us the interesting photograph which we reproduce herewith, showing what he states to be the original design of an excavator which swings in a complete circle, using a circular rail and cable swing device.

This machine was built by the Kinser Construction Company in the early nineties and was sold in 1903 to Callahan Brothers. It was first used on the Chicago Drainage Canal about 1896-7, then on the Illinois and Mississippi Canal, (commonly known as the Hennepin Canal) at Rock Falls, Illinois in 1899, at Mineral, Illinois in 1901-2, at Green River, Illinois on the same canal in 1903, where our view was taken, and then at Colona, Illinois in 1904, and in 1905 it was shipped to Bancroft, Nebraska for canal work there.

Because of the tremendous strides that the dragline excavator has taken since these early

days, we feel that a description of this early prototype of the husky line of descendants will undoubtedly prove of interest to many of our readers.

This machine was built to handle an orange peel bucket, but when the scraper or drag bucket idea was first talked about, such a bucket was built in a local boiler shop and tried out on this machine at Green River, Illinois on the Illinois and Mississippi Canal in 1903 by Callahan Brothers. Its use was discontinued, however, as it was found to be impossible to make the bucket get the proper pitch in order to dig in a satisfactory manner. For a time a block of wood was placed on the ground back of the bucket so as to provide the proper pitch, but it was eventually abandoned.

Description of Machine

As a revolving excavator with a grab bucket, however, this machine was a success from the start.

It weighed about 65 tons. The sub-base revolving frame and boom were of timber construction throughout. The rail circle was 20 feet in diameter. It was mounted on seven 18-in. wheels, similar to railway wheels, four in front and three in the rear. These ran loose on shafts. The center casting was a bevel-faced ring 5 feet in diameter and 8 inches high with a timber filler inside. Through this passed a 3-inch King bolt which passed through timber into the revolving frame, holding the two frames together.

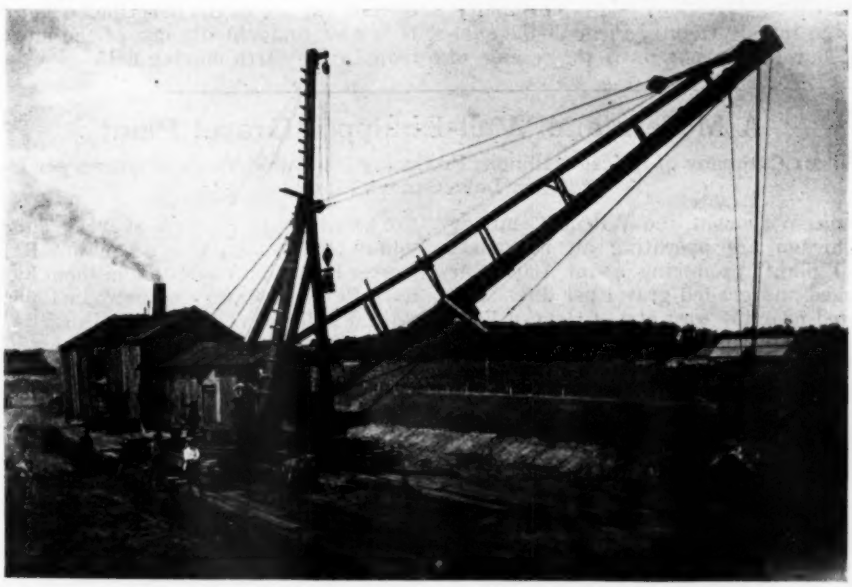
The revolving frame consisted of six 14-in. x 16-in. x 32-ft. timbers laid parallel, with a total width of 16 ft. Cross members were placed on top of these and were securely bolted to them.

The engine was a 9″ x 10″ two-drum Lidgerwood hoisting engine; the vertical boiler was mounted on the engine bed between the cylinders. It was of light construction and frequently broke

The Original Page Bucket

down. The swinging was accomplished by a cable swing, driven by a 6″ x 8″ link-motion engine.

The A-frame was of 12″ x 14″ timbers, 22 ft. in height in front of the revolving frame. Stiff leg brace timbers supported it, and hog rods extended from its top to the back of the revolving



The First Revolving Excavator Operated by Callahan Brothers at Green River, Illinois, on the Hennepin Canal in 1903

frame. The hog rods were fastened to a 3" shaft in the A-frame head, over the middle of which shaft passed a U-bolt. To this was fastened the boom line sheave blocks. A timber extending from the top of the A-frame supported a heavily weighted traveller, which worked up and down, taking up and paying out the dump line cable. This cable, instead of being dead-ended on the drum, passed from the bucket over the point of the boom down to the drum, where after five or six wraps, it passed to the top of the mast and was attached to the traveller.

The boom was of timber, 65 ft. long. A guy on either side was anchored to the outer corners of the revolving frame. The boom was hinged to the revolving frame, an extension of the boom with two steel rollers on the end, worked against the bevel face of the center ring. The bucket was a 1¼-yard orange-peel. The machine used planks and rollers for moving up. This was done with snatch blocks and a winch at the end of the drum shaft.

As stated, the machine did good work. Mr. Walton states he operated it digging drainage canals, ditches and railroad cuts and fills.

First Dragline Buckets

At the same time that Callahan Brothers were experimenting unsuccessfully with a drag bucket at Green River, Illinois, the original Page bucket was having its first test on the Hennepin Canal at Colona, Illinois, in the excavation for a lock foundation. This was in the fall of 1903.

This original bucket was shaped like a wheel scraper pan, as may be seen from our views. It was used on a stiff-leg derrick by Page and Shnable. It was operated in this vicinity through the summer of 1904, but it was not until the winter of 1904-05 that a Page Bucket of the present design was built.

Such a bucket, according to Mr. John W. Page, was started in the lock foundation work on the Hennepin Canal in the Spring of 1905 on Page and Shnable's contract. Then W. E. Callahan of Omaha tried one out on the Hennepin Canal in 1906 which was discarded because the runner was unable to familiarize himself with its operation. It might be added, however, that later on Mr. Callahan again tried a Page on another job and became one of its earliest and most enthusiastic advocates.

Page and Shnable's stiff leg derrick on which the original Page bucket was used. This was on the Hennepin Canal, at Colona, Illinois, in 1903.

On the Barge Canal in New York in 1908, and in the same year on levee work near Baton Rouge, it might be said that the present dragline era actually started in a practical manner. The Kinser Construction Company operated two draglines near Fort Edward, New York and Dameron & White, two others on the Mississippi. From then on the use of the dragline bucket grew apace. It is now undoubtedly one of the most important tools in the earth moving field.

A Modern and Well-Equipped Gravel Plant

The Wilcox Company of Chicago, Illinois, Producing 700 Cubic Yards of Gravel per Day at Their Lake Geneva Plant

AT Fontana, Wisconsin, the Wilcox Company of Chicago are operating an up-to-date gravel plant, producing about 700 cubic yards of washed and graded gravel per day. The plant is located near the west end of Geneva Lake on the C. H. & G. L. Electric Railway which connects with the C. M. & St. P. Ry. at Walworth, Wisconsin.

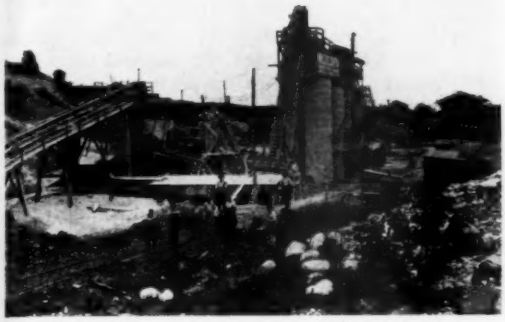
The Company leases about 38 acres of gravel beds. The gravel averages 100 feet in depth, coverd by 3 feet of overburden. This is stripped with teams and slip scrapers.

Steam Shovel Operation

The gravel is dug and loaded with a 65-ton Bucyrus railroad type shovel. Before this shovel was put on the job the gravel was taken out with a No. 1 Crane-type Bucyrus shovel. This shovel was sold in 1892 to the Chicago Junction Railroad Company. It was purchased from them by the Geneva Lake Sand & Gravel Company in 1908 and finally retired from service in 1918 after giving 26 years of satisfactory service to its owners. The 65-ton Bucyrus shovel now on the job was originally owned by H. S. Kerbaugh of Marysville, Pa., who purchased it in 1903. The Geneva Lake Sand & Gravel Co. bought it in 1918 after it had been on several different kinds of work in various parts of the country.

Description of the Plant

The gravel is loaded by the shovel into 7½ yard hopper bottom cars. A 5-ton electric locomotive hauls the cars to a track hopper, where



A general view of the Wilcox Company's plant showing the crushing plant and the four storage bins. Gravel can be loaded direct from the bins to cars on the track shown here.

they are dumped. From this hopper the gravel is lifted by a conveyor belt to the scalping screen where the boulders too large for the crushers to handle are separated from the gravel. The smaller boulders are crushed to proper sizes by an Austin No. 4 Crusher and a Symonds Disc Crusher. After passing through the crushers the material is elevated to the top of the bins. Here it is washed and screened to four sizes of finished product from coarse gravel to dust.

The five grades of gravel are stored in four circular concrete bins, one bin being divided by a partition. These four bins are all 14 feet in diameter, one 28 feet high, two 32 feet and one 34 feet. Gravel from the bins may be loaded directly into trucks or cars.

Most of the gravel is shipped to the Company's

(Continued on page 316)

On This Side of the Storage Bins Trucks Can Be Loaded Directly from the Bins as Shown

The 65-ton Bucyrus shovel at work in the Wilcox Company's gravel pit. The electric locomotive can be seen at the left of the picture. This view gives a good idea of the character of the gravel and how it breaks up. No shooting is necessary.

5,000 Yards in 64 Hours

Performance of a ⅔-Yard Revolving Shovel in Los Angeles, Loading Trucks on an Eleven-Foot Bank

SEVENTY-EIGHT cubic yards per hour, is, in the lingo of the day, no slouch of a performance for a 2/3-yard revolving shovel. Moreover, the fact that this was done loading trucks in an eleven-foot cut, does not strip any gloss from it either.

This all happened in Los Angeles between April 4th and April 9th of this year. The contractor was J. R. McKnight of that city. Mr. McKnight is a busy man. He does not believe in stalling on a job, particularly when there are more such on his schedule. Furthermore, when he digs in, he digs in and out again with a minimum of wasted hours. The job which we have for consideration, however, consisted of the excavation of a basement for a warehouse, aggregating a total yardage of 5,000 cubic yards. The material was clay, sand and gravel, and easy material to handle.

His equipment consisted of a 14-B, 2/3-yard Bucyrus revolving shovel fresh from the shops, mounted on traction wheels and served by a fleet of five 3½-ton Mack trucks. These trucks averaged a haul of 1½ miles.

He dug in on Monday, April 4th and dug out on the following Saturday, an elapsed time of six days, but an actual working period of 64 hours—four days single shift and two days double shift of eight hours each. This means 625 cubic yards per shift or a shade over 78 cubic yards per hour.

The shovel was equipped with a boom of standard length, 18 feet, an extra long dipper handle 16 feet in length, and as stated, mounted on traction wheels.

Trucks were loaded on a bank measuring 11 feet from base of shovel to base of truck. This was made possible by setting the boom at 55 degrees. The boom, by the way, was fitted with a power boom hoist, considerably facilitating the change in the pitch.

This performance is considered by local contractors as quite noteworthy, and much credit is due to Mr. McKnight and his superintendent as well as the men on the shovel for the efficient manner in which the job was organized and carried through.

Building the Joliet-Morris Road in Illinois

Comparison of Central Mixing Plant and Industrial Railway Methods of Laying Concrete Road—Caterpillar Mounted Revolving Shovel Equipped as Crane Used for Handling Batch Boxes and Moving Mixer

POWERS-THOMPSON Construction Company is another example of expert railroad and bridge builders who have turned the energies of their trained organization into the road construction field with unqualified success. In the fall of 1919 this company was awarded the contract for Sections J 15D, E, F and G on Federal Aid Project 10 for the construction of a 21-mile stretch of 18-ft. concrete road between Joliet and Morris, Illinois, located in Grundy and Will Counties. This road is a part of the projected Federal Aid Highway from Chicago to St. Louis.

This work is interesting from two principal standpoints. First, because they are handling the work by two distinct methods, The Central Mixing Plant and the Industrial Railway Methods, a comparison of which proves most interesting. Secondly, because they are using a revolving shovel equipped as a crane for handling the batch boxes at the mixer, and for moving the mixer.

Actual work was started in the Spring of 1920, but due to lack of transportation facilities on the railroads at the time, it was impossible to do much work in actual concreting until early in September 1920.

However, during the spring and early summer of that year over fourteen miles of grading was completed. The 1921 season started on April 21st and it is expected that the job will be completed in October, as this smooth running organization is at the present time turning out completed road at the rate of over a mile a week.

The contract called for a 21-mile concrete highway, as stated, 18 feet wide, with 7-inch sides and 8-inch center, with the necessary grading, bridges and culverts, the contract price being $649,572.09.

Excavation

The excavation was light, running about 5,500 yards to the mile, cut and fill. A small amount of shovel work was done with one of their two 14-B Bucyrus shovels mounted on caterpillars. This was in the vicinity of Channahon, where a cut was necessary in order to revise grades. At another point near the plant of the Chicago Gravel Company a few miles out of Joliet it was necessary to borrow several thousand yards, which was also done with a 14-B with wagons. The greater part of the light grading, however, was done with an elevating grader, the work being sublet to the New Era Construction Company of Chicago of which J. J. (Jerry) Connors is president.

J. R. McKnight's 14-B Bucyrus revolving shovel loading 3½-ton Mack trucks on an 11-foot bank. This gives a good idea of the size of the job and the character of the material.

Not Too Long a Reach for the Bucyrus

5,000 Yards in 64 Hours

Methods of Concreting

As stated before, two rival methods have been tried out for handling the concrete and aggregate. The Central Mixing Plant and The Industrial Railroad Method. In brief, the former method entails the receipt of the cement, gravel and sand, the mixing of the concrete and the delivery thereof in a plastic state to trucks, by which it is carried to the job.

In the Industrial Railroad or Central proportioning method the material is proportioned into batch boxes which are loaded from bins by gravity, the sacked cement being emptied in by hand. The batch boxes are then carried to the mixer by industrial railroad.

The Central Mixing Plant

The north 7½ miles from the Joliet end is laid from The Central Mixing Plant. This is located at the Rockdale Pit of the Chicago Gravel Company, the mixed concrete being hauled in both directions, the maximum haul being 4¾ miles. Ordinary dump body trucks have been used, some of which have been rented from the state and the balance owned by the contractors.

From the washing plant the material is taken over the Chicago Gravel Company's tracks by the contractor's own locomotives and cars to the mixing plant, thus eliminating freight and switching charges. From here it is unloaded by means of a guy derrick with a one-yard clamshell bucket and placed in elevated bins or hoppers.

From these bins the material is delivered by means of measuring chutes to two No. 24 Koehring mixers. The cement is trucked from the cement storage building. The mixed material is discharged from the mixers into an Insley bucket and tower which elevates the concrete and empties it into a hopper over the roadway, from which it is delivered

The Central Proportioning Plant. Note cars with batch boxes ready for loading under the bins. The sacked cement is added by hand.

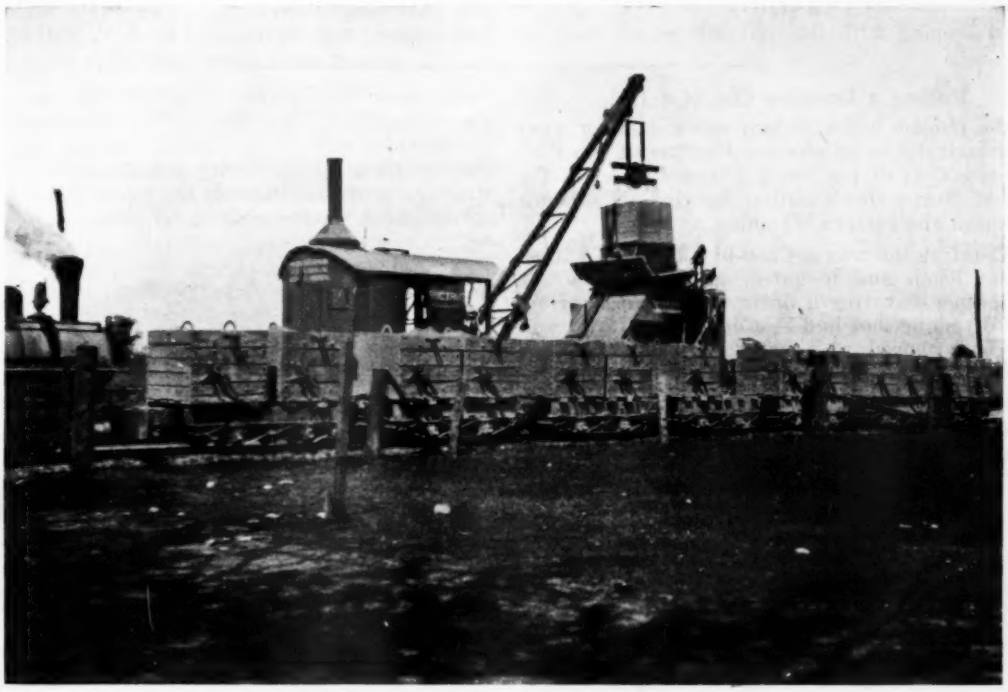
to trucks which drive underneath. The number of trucks in use varies with the length haul. At times three trucks have kept both mixers running to capacity, on longer hauls eight have been necessary.

Central Proportioning and Industrial Railway Method

The industrial railway outfit until recently has been working out of Wood Spur, a side track on the E. J. & E. Railway a short distance south of Minooka, Illinois. From this plant the balance of the work or about 10½ miles has been handled.

18-B Bucyrus Crane Lifting a Filled Batch Box Off the Cars

The maximum haul here has been 5½ miles, which carries the material to the end of the stretch being handled from the Central Mixing Plant, about 1½ miles north of Channahon. The material was received over the E. J. & E. Ry. from the Plainfield Pit of the Chicago Gravel Company and handled from the cars into elevated hoppers with a locomotive crane and drawn from there direct into Western batch boxes placed on the cars beneath the bins, the proportion being one part cement, two sand and three and a half gravel. Sacked cement was added by hand.



The Bucyrus Crane Dumping a Batch Box into the Mixer

The industrial railway is worthy of a more detailed description. The batch boxes have a capacity of 54 cubic feet of unmixed material each. These are set on 3-yard Western dump cars, two to each. The cars are adapted for this purpose by taking off the bodies and adding additional temporary sills. The gauge is 36 inches, thus the equipment serves a double purpose, being readily re-converted for dump car service.

Heavy grades, some running as high as 5% have limited the length of trains to seven cars. After this section was passed, however, 12 to 14 car trains have been operated. Thirty-six cars, carrying 72 batch boxes, with three 10-ton Vulcan and one 12-ton Davenport locomotives are used. The Vulcans are used entirely on road service and the Davenport for Terminal switching. Where the heavier grades were encountered, it was necessary to split up the trains. This was done by connecting the first three loaded cars to a motor truck with a long cable and hauling them up in this manner. The locomotive followed with the other four cars. One car loaded with two batch boxes weighs slightly over six tons. This arrangement worked out in a very satisfactory manner and avoided "doubling" the locomotive.

The track is made up with hard wood ties and 25-pound rails. The gauge is 36 inches. The ties are placed approximately 18 inches apart. The track is laid in 15-foot sections, which makes it portable.

Revolving Shovels Used as Crane

When a train arrives at the mixer, which is a 28-E Koehring, the batch boxes are lifted from the train by a Bucyrus 14-B caterpillar mounted revolving shovel equipped as a crane with a 30-foot boom, and discharged into the mixer; at a bell signal, while the batch is mixing, the empty box is returned to the train and another swings into position over the mixer. This shovel is also used for pulling the mixer.

Comparative Costs and Output of Concreting Methods

It has been found that the average capacity of the Central Mixing Plant is approximately 450 feet

of 18-foot road a day, whereas with the Industrial Railway Plant the average run has been a little over 600 feet per eight-hour day. The maximum run has been 876 feet per eight hours, which is the record for the State of Illinois for any one plant in this period of time.

It is of particular interest to observe that the cost of laying concrete with the industrial railway has been approximately 9% less than with the central mixing plant. With both plants in operation this excellent organization is completing somewhat over a mile of road per week.

The Camp

In keeping with the well-ordered efficiency of their organization, the contractors maintain an excellent camp. The buildings include a modern kitchen, dining room, club room and bunk house all of wood. The best of help is employed in the kitchen and about the camp, and no effort is spared in obtaining the best of food or comforts for the men. The effects are very evident in the excellent results obtained from the organization and the splendid personnel of which it is composed.

George F. Powers is President of the Company; Christ Thompson, Vice President; Geo. H. Jennings, Manager and Chief Engineer and Jas. W. Patterson, Secretary. The State Highway Department was represented by J. P. Tuthill.

Pulling a Dragline Out of a Hole

We publish herewith two views showing what a washout did to an electric dragline on the Fort Laramie Unit of the North Platte Project of the United States Reclamation Service in western Nebraska and eastern Wyoming.

The dragline was a Class-9½ Bucyrus with a 50-foot boom and mounted on caterpillars. It had been excavating a drain ditch near Torrington, Wyoming, but had been idle temporarily and had been moved to a supposedly safe distance from the cut.

In this interim, however, came a cloudburst. Three and a half inches of water fell in a few hours, cutting out the ditch from under the machine.

The result is shown clearly in our views. The cut at this point was about 7 feet deep. The machine reposed at an angle of about 45° both lengthwise and crosswise, one end of one caterpillar being about 6 feet below the grade of the ditch. The transformers were buried in the mud and the rear end of the cab which contains the grids was full of sand and water.

Mud and water were allowed to dry for a few days and then work was started on the machine. Cables and chain hoists were attached to deadmen and to the frame on the high side as may be seen. Jacks were then placed under the low corner of the caterpillars. By working all simultaneously, the machine was partly righted. Power was then applied from a bank of dry transformers and the dragline propelled itself to the top of the cut.

Debris lodged on the hoist bail and the padlock above the bucket indicated that the water had been no less than 3′ deep on the original ground level. Two days after the machine was out it was ready for operation.

We are indebted to Leigh G. Cairns, Superintendent of Construction at Kiowa Camp, Morrill, Nebraska for the above information.

National Drainage Congress Meeting

Arrangements are now being completed for the entertainment of the delegates and members who will attend the annual meeting of the National Drainage Congress which will be held September 22 to 24 at St. Paul, Minnesota. It certainly looks as though this would be by far the best meeting that the Congress has ever had. Mr. Edward T. Perkins is president of the National Drainage Congress and Mr. L. Y. Sherman is secretary and director. The permanent headquarters of the Congress are in the First National Bank Building of Chicago.

The Excavating Engineer

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THE
EXCAVATING ENGINEER PUBLISHING CO.
Bradlee Van Brunt, Manager and Editor
South Milwaukee, Wisconsin

Have Prices of Construction Material Reached the Bottom?

This question is in the minds of many at the present time. Manufacturers and business men are watching every sign and index of trade with the hope that the period of deflation has finally come to an end, as this would mean a revival of the buying movement and a return of the long looked for period of normalcy.

Contractors are carefully watching for the time when they can buy construction materials without the fear that a month later they can buy them to a greater advantage. Associations of Commerce the country over are scanning the situation from various points of view, but mainly with the hope of relief in the unemployed situation.

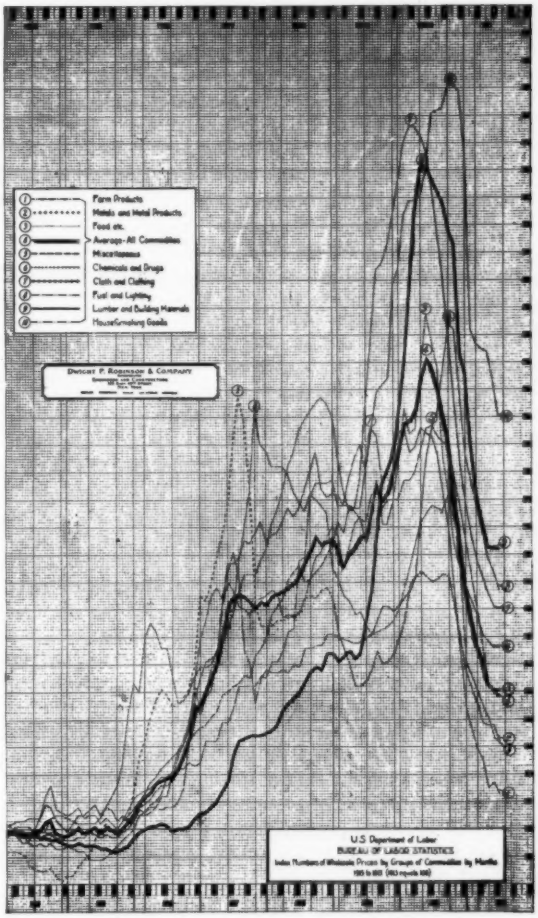
Everyone is looking upon the situation from their own standpoint and their conclusions consequently are colored by the manner in which they would like their own situation to be affected. We have gone through a period of tremendous deflation following the war and have, for the past year, been experiencing the natural and yet painful reaction which has been all the more painful since the inevitable deflation has been more precipitous than many expected.

The time has come when students of the situation are beginning to see more normal conditions ahead. To illustrate this situation we are very glad to publish herewith, a chart prepared by the Dwight P. Robinson & Company, the well-known engineers and constructors of New York. We do so with the confidence of its interest to our readers, as this point of view most naturally coincides with the average man who is concerned with matters of excavation.

This chart is based upon figures prepared by the Bureau of Labor Statistics of the Department of Labor and covers the period from 1914 to July 1, 1921. Although the price tendencies of nine groups of commodities are shown, our readers will be particularly interested in the heavy line, No. 9 on the chart, denoting lumber and building materials.

It may be explained that the index numbers which appear on the sides are based on average wholesale prices, the figure 100 being the average of 1913.

A study of this chart will show that all commodities have been dropping very rapidly and a few of them are just starting to straighten out,



among these few being building materials. It will be noted that building materials experienced an unchecked rise from April 1919 to May 1920. They then started to fall and this fall was not checked until May 1921. They have taken a deflation of 139 points from their peak, as contrasted with the average deflation for all industries of 124 points, and this in spite of the fact that the demand for construction materials for certain types of construction has been more than normal. For instance for the month of January this year, con-

(Continued on page 314)

· FIELD NOTES ·

The Care of Concrete Mixers

By L. P. Lessard

Sales Dept., The T. L. Smith Co., Milwaukee

(Continued from last issue)

Washing

Wash out the drum before the mixer is stopped. It is necessary to keep the inside of the drum clean, as only a clean drum will do good work. Fill the drum with water and revolve until it is clean, then discharge the water. If water alone does not clean drum, add a little crushed stone, or a few small pieces of scrap iron.

If the drum is once neglected and cement allowed to harden inside, it is very difficult to clean.

Blocking

It is sometimes desirable to block mixers. Do this whenever possible. It not only prevents destructive vibration but saves power and repair bills.

Care of Boiler

If you have a steam driven mixer, follow these instructions carefully. Do not fire hard when the boiler is cold. The type of vertical boiler best adapted to concrete mixers has one weak point, viz., the top end of the flues are not surrounded by water. In raising steam, the fire should not be crowded until some pressure is shown on the gauge, or the top of the tubes will be overheated and the boiler will surely leak.

A boiler is really a sensitive apparatus and requires as much or more attention than the engine.

Repairs

Keep your mixer repaired. Don't allow parts to be worn so they affect the operation of the mixer. The minute you notice a worn part order a new one. It will pay you every time. Particularly watch your drum rollers. Replace them as soon as they are worn or become wabbly. Never allow your drum to run untrue. Watch every part and replace it with new one as required.

Operating Repairs

Always keep the repair lists which the manufacturer furnishes. Order your parts by numbers or according to the factory instructions. You would be surprised how much time it will save and the sooner you get the replacement part on your mixer the better for the mixer.

These simple rules, if followed carefully, will apply to any make of mixer. As a rule manufacturers furnish instruction books which go into detail on each item, but if contractors will follow the above rules and use their own judgment about oiling, loading, and taking care of their mixer, they will find that their mixer will give them better service and last much longer.

Maintenance and Upkeep of Motors on Electric Shovels and Dragline Excavators

This article is the first of a series dealing with the "Maintenance and Upkeep of Motors on Electric Shovels and Dragline Excavators." This subject is treated under three main heads as follows: "How to Maintain Motor Bearings," "How to Rewind Induction Motors," and "Overheating of A. C. Motors on Shovels and Dragline Excavators." The attention of all those concerned with the operation of electric excavating machinery is particularly called to these articles and it is hoped that they will preserve them for future reference.

I. How to Maintain Motor Bearings

Hot bearings are sometimes the cause of trouble with motors as the average operator is apt to overlook the fact that they should be examined at regular intervals. When the bearings become uncomfortably warm to the hand, or when the temperature exceeds 75°C., they are overheated from one or more of the following causes:

Insufficient Oil

The oil reservoir should be kept filled to the overflow valve with a good grade of lubricant to insure a proper supply to the shaft at all times.

Dirty Oil

The use of a poor grade of oil or a lubricant containing any foreign matter should be carefully guarded against, as a small amount of grit or similar substance in the oil may result in scoring of the bearing lining. Even when dust-proof bearings are used, the bearings should be cleaned at regular intervals by draining off the oil, washing the bearing housing thoroughly with kerosene, and refilling with clean oil.

Failure of Oil Rings to Revolve

When a motor is first put into service, there may be some tendency of the oil rings to stick so that the oil is not carried to the oil-grooves. It will be found advisable to examine the rings immediately after starting a motor which has not been put into service for a considerable length of time, or a new motor just being put into service, in order to see that the rings are properly lubricating the shaft.

Compression Grease Bearings

As the thrust motor of an electric excavating shovel is usually mounted on the boom at an angle, and since the motor is required to make only a comparatively small number of revolutions, where horizontally split frame motors are used, means must be provided for forcing grease against the shaft to insure proper lubrication. Where a motor with grease bearings is in operation long enough for the heat due to bearing friction to cause the lub-

ricant to flow readily, no special means of insuring lubrication are required, but in the case of the thrust motor for electric shovel operation or similar applications, compression grease cups are usually used.

This type of grease cup consists essentially of a section of metal tubing inserted in a drilled hole in the bearing housing. Into this tubing a piston is fitted which is forced downward by a spring. By means of this arrangement, the lubricant with which the tubing is filled is forced against the motor shaft, insuring proper lubrication under all conditions of operation. Compression grease bearings should be examined at regular intervals and the tube refilled with grease as needed. The spring should be suitable strength, and properly adjusted to insure lubrication. It will also be found advisable to thoroughly wash the grease bearings at regular intervals, and refill with a new supply of lubricant.

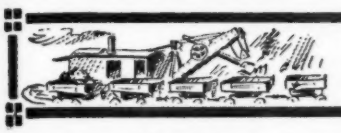
Poor Alignment of Gears

If the motor pinion and gear are not in proper alignment, end thrust will result when the motor is loaded, and one of the bearings will usually overheat. Not only is it important to maintain proper alignment of gearing to eliminate this end thrust which must be carried by one bearing, but also due to the fact that this thrust tends to overload the motor.

Bent Shaft

A bent or sprung shaft will cause overheating of the bearings and should be replaced as soon as possible. In addition to bearing trouble, a bent shaft may also cause excessive mechanical vibration and chafing of the rotor against stator, which may destroy the insulation of the coils.

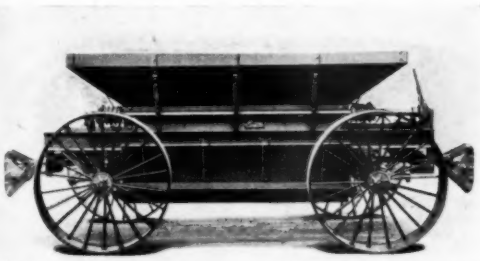
A subsequent issue will contain a continuation of the discussion of "How to Maintain Motor Bearings." This will be treated under the following subjects: "Worn Bearings" and "Rebabbitting of Bearing Shells."



DEVICES YOU OUGHT TO KNOW ABOUT

The New Miami Slow Speed Tractor-Drawn Trailer

An all-steel chassis construction, low over-all height of the body (60 inches), and heavy duty Hyatt high speed roller bearing equipment are distinguishing features of the new Miami Slow Speed Tractor-Drawn Trailer, manufactured by the Miami Trailer Company, of Troy, Ohio.



Equipped with All-Steel Body

The tractor-drawn, reversible hauling trailer has demonstrated that under most conditions it will deliver material at a lower cost per ton mile than any other equipment. In this new trailer design, the Miami Company has attempted to anticipate and overcome every difficulty that has been or may be encountered in road building. With this new design, they claim to come nearer to realizing full efficiency from this type of hauling equipment than any other manufacturer has yet attained.

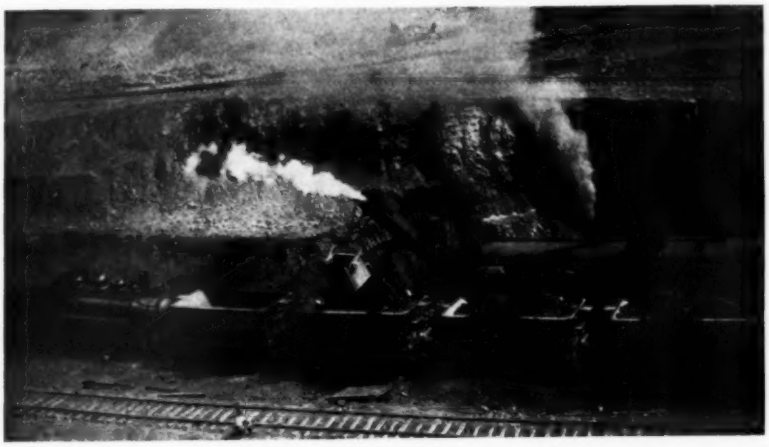
The chassis frame is made of 6-inch channel steel, securely riveted at corners and cross members, using heavy corner irons and angle reinforcements. Two heavy coil springs under tension on each side of the trailer at one end and the rigid construction of the frame take care of all torsional twists that come from operation over uneven road conditions and throw no strain whatever on the body.

In order to permit efficient use in connection with elevating graders, it was necessary to keep the height of the body to a maximum of 60 inches. In order to have a trailer flexible enough to operate under all conditions, the Miami engineers had also to solve the problem of reducing this height without increasing the wheel base. This has been successfully worked out.

Hyatt Heavy Duty Roller Bearings are used. These bearings are protected on the inside and outside by dust collars, and are adjusted for end thrust.

The Alemite System of lubrication is employed. Every bearing is equipped with Alemite grease nipples and each train of wagons is provided with an Alemite grease gun. A train of six wagons can be lubricated by one person in from 10 to 15 minutes, insuring perfect lubrication to every part.

Well ironed white oak is used in the body construction, both on account of its wearing qualities and because of the fact that repairs to damaged parts can be made without its being necessary to have the work done in a machine shop.



These two photographs show an 88-C Bucyru
Mine, Crosby, Minn. On the day this pho
a ten-hour shift, setting a new record f
digging very hard

Class-180 dragline working on the St. Francis Levee District of the Mississippi River Commission. This job is 30 miles north of Memphis on the Arkansas side of the river. The machine is here reinforcing the banquette, or base of the levee. The dragline is equipped with a 145-foot boom and 3½-yard bucket.

225-B Bucyrus electric shovel
iron ore at Nashwauk, Min
tric dragline equip

digging and loading iron ore at the Hillcrest
shovel loaded 104 fifty-ton ore cars during
shovel has been in service since 1917
surface and rock.

M. A. Hanna & Co., stripping
is now operating as an elec-
and 5-yard bucket.

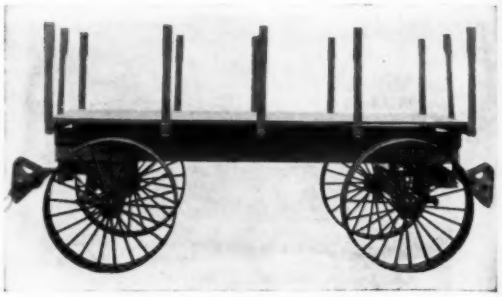
Two Class-7 Bucyrus draglines working in Florida Everglades on the N. B. Broward Drainage District. R. H. Marsh is at the levers on one, and George Hooker on the other. H. M. Ellerkamp is foreman on this job.

The bottom doors are made of 10 gauge steel, reinforced with 2″ x 2¼″ angle steel provided with a 2-inch overlap which insures a perfectly tight bottom. The double doors open to a space 38 x 73″ insuring the instant dropping of load when dumping mechanism is released.

The winding device embraces a shaft running from the front of the trailer to the rear, with a winding spool on each end operating so that each chain will close both ends tight with one operation. The winding lever can be operated from the ground or from the chassis frame while the train is in motion.

The tires are 10 inches wide, the wheels being of all steel construction 44 inches high with ⅞-inch steel spokes.

Miami Slow Speed Trailers are reversible in action. They are so designed that a train of trailers can be successfully backed by steering the last wheels of the rear trailer of the train. While this is not often necessary in road construction, it is sometimes the only means of quickly placing the train at a desired loading point.



Equipped with Stake Body

The Miami Trailer Company is also making this new trailer in a reversible platform hauling model and in an extension trailer model for lumber, pole and pipe hauling, equipped with two sets of log bolsters.

For detailed information in regard to Miami Trailers, write the Miami Trailer Co., Troy, Ohio, using one of the blank postals inclosed in this magazine.

SHOTS FROM THE · FIRING LINE ·

Canada

Eastern News

R. ST. JOHN, MONTREAL

L. A. Ott of L. A. Ott & Company is spending a few weeks at his summer home, at Port Hope, Ont. His work for the town of Mount Royal is progressing very favorably.

C. L. Hervey who has some ditching contracts in Glengarry, was in the city recently, and advised that his work is progressing very favorably, and that he has enough in view to keep him going until it freezes up.

Porter Bros. have secured the contract for the completion of sections 1 and 2 of the Welland Ship Canal.

The work recently let for the completion of the Montreal Aqueduct is coming along nicely. The various contractors and sub-contractors are installing equipment, and should have the work well under way by the Fall.

Good progress is being made in removing the old high school building, Peel Street, for the construction of the new Mount Royal Hotel. Several of the contractors are after the excavation, but as far as we know this has not been let. If this hotel were completed at the present time it would be full to overflowing, as the crop of tourists this year is the best ever.

The excavation for the new Canada Cement Building, Philips Square, has been completed, and work is begun on the foundation.

J. Cavvichi of the Bedford Construction Co., Ltd., St. John, N. B., was in town a few days ago, and advises that their work on the Courtney Bay Drydock is about completed. He states that he has nothing else in view for this Fall.

J. F. Davis and C. L. Lynch, formerly with M. P. & J. T. Davis, railway contractors, have gone into the coal business in Montreal, under the name of Davis & Lynch. They have an office at 201 Drummond Building, and we sincerely hope that they will be as successful in this line of business as they were in contracting.

The St. Lawrence River improvement project is being followed very closely by all Canadian contractors. Should the deepening of this river and the other work necessary to make it possible for ocean ships to go to the head of the Great Lakes, be started in the near future, it would be a fine thing for Canada. It would mean a lot of work and would relieve the labor situation here considerably.

The Hydro Electric Power Commission of Ontario are beginning to see the results of several years hard work at Niagara Falls. "The Big Ditch" is nearing completion, and those portions of it that have been completed are certainly good to look at. The officials who have had charge of this work are certainly entitled to a good long vacation, with full pay, preferably in Cuba, Quebec, or some other place where they could get the necessary stimulant to buck them up.

Andrew Wheaton and Harry MacLean, of the Grenville Crushed Rock Co., Limited, Smith Falls, Ontario, were in town a few days ago, and advised that they are now crushing stone at a record clip. They are both wearing a smile that won't come off.

It is reported that 6,000 harvesters left Montreal yesterday, over the C. P. R. for the West. Thirty thousand men are required this year to remove the bumper crop. This will give a great many men an opportunity to earn some money to carry them over the winter, which promises to be a very hard one on labor.

John Kennedy, of Kennedy & MacDonald, Antiginosh, N. S., was in town a short time ago, and reports that contracting in the Eastern Provinces has been very quiet for some time, with no prospects of anything coming up in the near future to relieve the situation.

Western News

Winnipeg and Vicinity

The latest estimate places the wheat crop of Western Canada to be just under 300,000,000 bushels. About 25,000 men have been brought in from Eastern points to assist in harvesting.

Work has been started by the Northern Construction Company on the Winnipeg River Development Scheme about fourteen miles from Lac du Bonnet, Manitoba. Further particulars of this will be given in a later issue.

The Canadian National Railways are asking for tenders on several reservoirs to be erected at various points in Western Canada, to overcome the present difficulties they have in getting a sufficient supply for the efficient operation of their trains. The work on the large one now being constructed at Melville by Messrs. Tomlinson & Fleming is proceeding satisfactorily in every way and is expected to be finished before the scheduled time.

D. C. Coleman, vice-president of Canadian Pacific western lines, and Grant Hall of Montreal, vice-president and general manager of eastern lines, are on an inspection trip over the road to Edmonton and Northern Division Branches.

Valuable deposits of sodium suphite have been discovered on the shores of Baxter Lake, west of Wainwright, it was reported by the Canadian Pacific Railway recently. The deposits are of high grade, and it is expected the bottom of the lake will yield even more valuable deposits than have yet been uncovered.

The waters of the lake are saturated with sodium, the report states. Along the edge of the lake, wells have shown 32 percent sodium carbonite, 30 percent sodium chloride and 30 percent sodium sulphite.

Edmonton and Vicinity

The Surrey, B. C., Dyking Commissioners awarded to H. B. Sullivan the contract for work in the Upper Serpentine drainage district.

Ten miles of steel will be laid this year on the Kamloops-Kelowna branch of the Canadian National Railway.

Five large wooden cribs to be used in connection with the construction of the landing wharf at the Skinner's Cove drydock, Victoria, will be built by Yarrows, Ltd.

W. R. Bonnycastle has formed a partnership with R. G. Leckie and D. E. Rice as the firm of Leckie, Bonnycastle & Rice, consulting engineers, with office in the Canada Life Building, Vancouver, B. C.

A. D. Creer, engineer of the Vancouver & District Joint Sewerage Board, has received notice from the board that it is their intention to terminate the agreement whereby he is paid 5% of the cost of construction as his salary.

G. B. Middleton, engineer and ship-builder, of Cairo, Egypt, recently arrived in Vancouver, B. C., on a holiday trip. Mr. Middleton is assistant technical advisor and field director of the Soudan Development Co., which is capitalized at $25,000,000 and controls 500,000 acres in the Soudan which have been opened to British settlers.

A thief went up to Pat and said: "Your money or your life." Pat replied: "Take me life; I am saving me money for me old age."

"Were you very sick with the 'flu,' Rastus?" "Sick, sick! Man, Ah, was so sick mos' ebery night Ah look in dat er casualty list for mah name." —*Whizz-Bang.*

Teacher (to little boy): "What is your name, dear?" Little Boy: "Jule, teacher." Teacher: "Don't say 'Jule;' you should say Julius." Then to the next boy: "And what is your name?" Second Little Boy: "Bilious, teacher."

Central States Notes

Mr. C. G. Oglesbie of Memphis was in Chicago recently. He reports good shipments of gravel from his section.

Engineer T. N. Jacob, Railway Exchange Building, St. Louis, has plans completed for seven different drainage projects, involving the improvement of a total of 179,200 acres, excavation of 26,948,000 cu. yds., of levees and ditches. None of these projects are as yet ready for bidders; all of them pending court action.

Mr. John Edgeworth of the Lehigh Stone Company was a visitor in Chicago during the past month. They have just installed a 100-Ton Bucyrus shovel in their plant at Kankakee, Illinois.

Mr. W. S. Tomlinson was in Chicago last month and purchased a Class 14 Bucyrus dragline for a reservoir contract he has just landed at Hubbard, Saskatchewan, Canada. Mr. Tomlinson also operates a Class 7 Bucyrus dragline.

Here is the crew that is responsible for the efficient operation of the 225-B Bucyrus shovel owned by the Narva Coal Company, Cadiz, Ohio. Reading from top to bottom we have George McGillvrey, Engineer; J. S. Booth, Cranesman; R. P. Carter, Fireman, and the oiler

C. Moriarity, Engineer, 513 United Bank Building, Sioux City, Iowa, is preparing plans for Garretson Drainage District, comprising 15 miles of main ditch 18 to 22 feet wide at bottom, 8 to 12 feet deep, 1 to 1 slopes.

Also about 20 open laterals, having a total length of 50 miles bottom width 4 to 8 feet. The work will be suitable for a dry land excavator.

E. E. Smith, engineer, and H. Long, craneman, who move considerable dirt in the vicinity of Cadiz, Ohio, with the Cadiz Block Coal Company's 225-B Bucyrus shovel

Mr. Bruce P. Smith, formerly located in the Chicago office of the Bucyrus Co., is now located with Beck and Babb, 29 South La Salle St., Chicago.

Mr. E. J. Scott of St. Louis and Mr. C. D. Smith of Memphis were in Chicago on August 4.

Mr. Jason D. Jones of Cedar Rapids, Iowa, spent a few days in Chicago this past month and brings good reports from Iowa.

Florida

City of Jacksonville recently rejected bids for dredging 70,000 cu. yds. in St. Johns River. About $45,000. F. M. Edwards, 1004 Main St., city engineer.

Iowa

Winneshiek County let contracts grading 14.02 mi. Federal Aid Project 98, Sects A and B, to W. R. Shipman Constr. Co., Sioux City, 142,708 cu. yd. earth excav., $0.43 per cu. yd.; 10,513 cu. yd. solid rock, $2; 6,269 cu. yd. loose rock, $1.20; to North Iowa Brick & Tile Co., Mason City, furnishing 46,468 lin. ft. 6 in. tile, $0.061 per lin. ft., 580 lin. ft. 12 in. tile, $0.21; to Mankato Constr. Co., Mankato, Minn., installing tile, 6 in. $0.091 12 in., $0.12.

Michigan

State Highway Dept. at office Bd. Rd. Comrs. Calhoun Co., let contract grading, draining and surfacing 2.574 mi. Federal Aid Project 58, Sect. A, involving 24,341 cu. yd. excav., 24,160 sq. yd. gravel, to A. J. Hoffman, North Adams, $25,794.

State Highway Dept. at office Bd. Rd. Comrs. Oakland Co. let contract grading, draining and surfacing State Trunk Line Rd. 87-1, to Bartling & Dull, Pontiac. Work involves 4.179 cu.yd. excav., $0.85, 20,484 sq.yd. bituminous concrete, $307. Total cost $67,529.

Mississippi

Bolivar County, Northern Drainage System will excavate 13 mi. drainage canal, removing 265,000 cu. yds. earth; bids opened July 26; W. W. Boone, Civil Engr.

Pelucia Drainage Dist., Leflore County Commrs. let contract to McWilliams Co., Memphis, Tenn., at $90,000 for constructing drainage district; drain 14,000 acres of land, southeast of Greenwood; ditch 30 ft. wide, with 5 mi. of 14 ft. lateral.

Northern Drainage Dist. Commrs., Bolivar County, will construct 13 mi. drainage canal on Bradford Bayou; 265,000 cu. yds. earth removal.

The County Commission has authorized the extension of Jackson and Eastern line from Sebastapol, in Scott County, to Jackson.

New York District

Walter Bradley, Contractor, Fulton, N. Y. has taken a contract with the village of Springville, to build a small concrete dam. There is about 10,000 yards of excavation. Mr. Bradley is getting his idle equipment in shape to begin work.

Walsh Construction Co. are fast completing their grade crossing work at Rochester. The work under the N. Y. Central and B. R. & P. Ry. tracks is completed and they are now cleaning up the south approaches. The Walsh Co. are also busy in Syracuse on 21 contracts for street paving.

The City of Syracuse has drawn plans for another water supply pipe from Skaneateles Lake to the city. They hope to be able to let contract shortly, so as to get at least half of the work done this Fall.

The C. T. Hookway Co. Bastable Block, Syracuse, have taken contract from the city for about 1200 feet of outlet sewer through the swamp lands between the city's disposal plant and Lake Onondaga. The T. L. Scott Co. New London, Conn. have the contract for carrying the pipe from the end of the Hookway job out into the Lake. Entire work will amount to about $135,000.00.

As many travellers have noticed, the passenger tracks of the N. Y. Central Ry. traverse one of the main streets of Syracuse, at grade. Slow speed is necessary through the city, much time being lost and other traffic held up for passing trains. The city has long desired to do away with the grade crossings. No suitable solution of the problem presented itself until the State of New York completed the barge canal. This runs several miles from the city and caused the abandonment of the old Erie Canal that parallels the N. Y. C. tracks through the city and only about two blocks from the Central tracks. The city now proposes to acquire these abandoned canal lands from the State and turn them in as a right of way for the N. Y. Central tracks. The tracks to be laid below grade in an open cut. The Central has hesitated to accept this solution as it fears heavy snow drifts into the right of way during the winter. The railroad desired to place its passenger tracks to the north of the city, with its freight tracks, and build a new station in the low lands in that district. The location is so out of the way and unhandy to reach with the present trolley facilities that the city would not accept. If so placed it would eventually be a good thing for Syracuse at large, as it would cause the development of a section that has been neglected and is an eyesore. Either solution means several good contracts. The city grade crossing commission hopes to get the railroad committed to the canal bed proposition this Fall.

North Carolina

Rowan County let contract to Boggs & Sperd at $8,100 for dredging Cold Water Creek from a farm southeast of China Grove to Cabarrus county line; remove 81,000 yds.

Northern States News

The contract for the excavation of Price County, Wisconsin, Farm Drainage No. 1 was let to the Wisconsin Drainage Company, Elkhorn, Wis.

Jack Brown of Madison Lake, Minn., was awarded contract for the construction of Hwy. Job No. 2106 in Blue Earth County, Minn., bids for which were opened on August 10th.

Douglas County, Wis., has let contract to S. J.

Groves & Son, Globe Bldg., Minneapolis, Minn:, for construction of Superior-Danbury Road Project No. 201.

Morris Construction Company, Morris, Minn., have been awarded 2.5 miles of graveling in Stevens County, Minn.

Campbell Construction Company, Minneapolis, Minn., have been awarded 10,800 sq. yds. of paving in Winona County, Minn.

C. W. McNamara, Bristol, So. Dakota, has been awarded 10.4 miles of road grading in Martin County, Minn.

C. N. Humphrey, Aberdeen, So. Dakota, has been awarded 23.4 miles of grading in Nobles and Jackson Counties, Minn., comprising 220,000 cu. yds. of excavation.

Cramer & Co., St. Paul, Minn., have contract for graveling 25 miles of road in Faribault County, Minn.

32,000 ft. of 6-in. drain tile and 10,000 ft. of 8-in. drain tile with inlets and outlets has been let to Jorgan Jorganson of Estherville, Iowa. This work is on Trunk Hwy. No. 10 between Howard Lake and Dassel, Minn. The graveling of this section, comprising 25,000 yds., was let to Dobbleman & Rasmussen.

Melvin Rosholt of Warba, Minn., has been awarded 6.2 miles of road grading work in Beltrami County, Minn.

Frazen Bros., Palisade, Minn., have been awarded 40,000 cu. yds. of road grading in Crow Wing County, Minn.

Couse & Campbell, Minneapolis, have contract for 11,900 cu. yds. of gravel surfacing between Montgomery and New Prague in Lesueur County, Minn.

State Project No. 1-21, F. A. P. No. 212, consisting of 26 miles of road grading work located between Westcott and Northfield, Minn., comprising 390,000 cu. yds. of excavation, has been awarded to Foley Bros. of St. Paul.

Dobbleman & Rasmussen, Minneapolis, Minn., have been awarded two jobs of graveling comprising 3.9 miles and 7.5 miles, respectively, in Dodge County, Minn.

St. Louis County, Minn., has awarded road contracts as follows:—To D. H. Clough Co., Duluth, 8 miles along shore of Lake Superior from city limits at Lester Park to Lake County line, 120,000 cu. yds. excavation. To Jacobson Bros., Duluth, Minn., 12 miles of paving extending south from Canadian Northern R. R. on Miller Hwy. To A. Guthrie & Co., St. Paul, Minn., E. F. Remer, Hibbing, Minn., and Minkler & Krmpotivsch, Buhl, Minn., grading between Virginia and Chisholm, 15 miles. To A. Guthrie & Co., 20 miles of road grading between Soudan and Ely. To W. E. Coons and Winston Bros. Co., Hibbing, Minn., 15 miles of grading between Virginia and Aurora. To Jacobson Bros., Duluth, Minn., 15 miles of paving from Duluth Heights beyond Pike Lake.

Notes from the Pacific Coast

BY P. H. BIRCKHEAD, C. W. WHITNEY AND A. L. HILL

James O. Higgins is running a 14-B Bucyrus steam shovel for J. R. McKnight. The machine has just completed the excavation for a new building near 7th & Olive Sts., Los Angeles.

Mr. F. S. Hess is Engineer, and Mr. Jorgensen is Fireman on Duntley, Sheets & Smith's new 14-B Bucyrus shovel which has just been put to work excavating for a new building on Western Ave., Los Angeles.

Marsh Bros. & Gardenier have finished their Southern Pacific job at Mojave and have shipped their outfit to San Francisco.

The Nevada Contracting Company, of Fallon, Nevada, secured a steam shovel grading job in Mono County from the California Highway Commission and have their Marion Model 28 throwing out the dirt.

Healy-Tibbetts Construction Company have gotten their state highway job in Nevada well under way. The contract price for this job was $217,835.50.

Hewitt & Felch have about finished their grading of the Western Pacific Ry., from Niles to San Jose, Calif.

Redmond-Page Company who have a big irrigation job near Yerington, Nevada, report good progress on their work.

Plans are being made for dredging a 16-ft. channel in San Diego, at the Fleet Repair Base, involving about 500,000 cu. yds. excavation, and also the construction of a 500 ft. concrete seawall. Bids will be called for shortly.

Dam and Power House to be built just above Pierce's Ferry, in Mohave County, Arizona, about 35 miles below Mr. Girands Diamond Creek project. Project will develop about 130,000 H. P. The proposed dam site will be flooded out if the U. S. Reclamation Service construct the Boulder Canyon Dam to the height now proposed.

Formal announcement has been made from the office of Governor Stephens, that A. B. Fletcher, State Highway Engineer, will be appointed director of the State Department of Public Works under the reorganization plan provided for by the last Legislature. Associated with Director Fletcher will be Wilbur F. McClure, at present State Engineer, as chief of the division of engineering and irrigation.

D. A. Melville and George Waters are operating a Class-14 Bucyrus dragline for Littlejohn and Singleton at Culiacan, Mexico.

Al Massey is operating an Osgood 18 for J. A. Hill, Los Angeles, California.

Robert Williams is operating an Erie for Dodson and Butterfield at San Pedro, Calif.

The Beck and Vander Excavating Company, Los Angeles, is a new corporation in the dirt moving world, and the active partners are manning a 29 Osgood for the Simon Brick Co.

One of the encouraging signs of the times and a substantial chunk of "food for thought" was shown in the building permits for May for Los Angeles, this city coming second to New York in permits for construction, the total being $7,433,760.

S. Marigson is operating a 30-B Bucyrus shovel for the Union Rock Company at Brush Canyon near Hollywood, Calif. The shovel is operated by compressed air. Mr. Emil Higuera is Superintendent of the quarry.

By a vote of 3,103 to 25 the people of the Madera Irrigation District have voted to undertake the largest irrigation project yet in the State of California. The district has about 350,000 acres, and the convincing vote marks the turning point in a ten year struggle to obtain cheap water. The project will cost $28,000,000.

By the damming of the San Joaquin River above the town of Friant, an artificial lake 18 miles long by 1 mile wide will be created which will finally close the history of Millerton, the county seat of Fresno, which at that time included both Madera and Kings counties. The old site of Millerton, abandoned in 1874 for a new site on the railroad, will now be completely inundated.

The dam to be constructed across the river will be 4,200 feet long and 320 feet high, and will use up 5,600,000 sacks of cement. Quarrying at the rate of 1,500 cubic yards per day, the work will take fully three years to complete. Two power plants will generate 65,000 horsepower electric energy. The main canal will be 37 miles long, 80 feet wide and 8 feet deep and over 1000 miles of ditches will carry the water to the land.

Progress is reported on preliminary arrangements for the section of the Sierra-to-the-Sea highway passing through Hanford and Coalinga to San Lucas on the coast highway. Contracts for this important road link are expected to be awarded soon. The State Highway Commission favors the immediate expenditure of another $500,000 on highway work between San Lucas and Coalinga, which will take this improvement over 12 miles or more of the worst part of the uncompleted section.

Supervisor R. F. McClellan, new Chairman of the Board of Supervisors, Los Angeles County, has started plans for extensive activity on behalf of the County. Plans include important flood control work during the coming year, consisting of the construction of the San

Dimas dam, the Live Oak dam, at a cost of approximately $60,000.00, and reinforcements on the San Gabriel dam. All the flood control work for the forthcoming year will total about $1,000,000.00. In addition, considerable road-work will be undertaken on the important roads of the County.

Grant Smith & Company of Portland, Oregon, have just been awarded a contract involving about one million dollars' worth of work for Leon Bly, who is in charge of the Tule and Baxter Creek irrigation district, comprising about 25,000 acres in the vicinity of Susan river and Lake Leavitt, (Calif.) It is understood that they will use their Bucyrus 18-B in this work.

Members of the boards of supervisors of eight counties that comprise the County Supervisors' Association of the San Joaquin Valley convened for their second quarterly meeting of 1921 in the supervisors' chambers of the Kern County courthouse in Bakersfield at 10:30 o'clock, June 24. Chris Jorgensen of Fresno County, president of the association, presided as chairman.

The eight counties comprising the association are Kern, Fresno, Kings, Madera, Mariposa, Merced, Stanislaus and Tulare.

A "soap mine" in the Mojave desert is the latest addition to the industrial enterprises in the Los Angeles section. The soap mine produces a colloidal clay which with very slight preliminary treatment, is said to be a superior grade of laundry soap. It makes a soft powder, and is said to set colors and remove dirt.

The State Water Commission has granted the following Water Applications and Permits:

Thomas W. Madeley, 610 22nd St., Sacramento, section from Sutter Slough for irrigation of 60 acres. Diversion by Pump.

C. E. Schmidt, 369 Pine St., San Francisco, for ½ cu. ft. per section from Soquel Creek, irrigation of 80 acres, diversion of pine line, cost $10,000.

Henry J. Barton, Yreka, for 25 cu. ft. from Beaver Cr. Siskiyou County, for mining purposes, cost $20,000.00.

Holland Land Company, Clarksburg, for 160 cu. ft. per sec., Elk Slough and Sacramento River, etc., Yolo and Solano Counties, for irrigation of 1800 acres, diversion by pumps, cost $75,000.00.

In the Northwest this summer there has not been as much shovel work as usual, but a number of old time operators have kept busy.

Roger LaBelle is running a 45-ton Bucyrus for the Western Diatomite Company at Terre Bonne, in central Oregon. Diatomite is a mineral of a chalky, talc-like consistency, and is used principally for filtration in sugar refining.

Boss & Hampshire finished their shovel work on the Highway job near Roseburg, Oregon and they have sold one of their 18-B Bucyrus shovels to the Rogue River Valley Canal Company of Medford, who are using it and three Erie machines to rush work on their canal. Joe Coxon and Ed Thomas who were running the 18-B's are now taking a vacation. John Wier is running an 18-B Bucyrus at Blanchard, Washington, where Boss & Hampshire are doing some improvement work for the State Highway Department.

Paul Tyler who was doing part of the grading on the Utah Construction job near Scofield, Oregon, is putting his 70-ton Bucyrus in shape to resume operations.

A. D. Kern is working his three 18-B Bucyrus shovels on grading and paving of State Highway in eastern Oregon.

It is reported that the Hauser Construction Company are making good progress with the Southern Pacific tunnel at Elk Rock, south of Portland. They are using an 18-B at the mouth of the tunnel to load the muck as it is brought out.

John Doyle is using the Star Sand Company's 18-B Bucyrus shovel on highway improvement work near Woodland, Washington.

The Pacific Coast Paving Company are working a 45-ton Bucyrus shovel on highway grading at Grays River, Washington, and the Northwestern Improvement Company is working a 70-ton Bucyrus at Astoria, Oregon.

Some of the logging companies are working their shovels on grading for logging road extensions which will be needed in the near future, among them being Wynooche Timber Company at Hoquiam, Washington; Doty Lumber and Shingle Company at Doty, Washington; Polson Logging Company at Aberdeen; and Clemons Logging Company at Montesano, Washington.

Highway grading during the past two months in the state of Oregon has made better progress than at any other time in the history of the state, due to a plentiful supply of both labor and materials, the disbursements by the State Highway Department for the month of July having been the heaviest in their history. Much of the new work contracted for this summer by the Highway Department is being handled by station men taking small sub-contracts, and practically all work let to date is covered.

South Carolina

Piedmont and Northern Railway contemplates the construction of a link of road between Spartansburg and Gastonia, N. C.

Southern States News

BY C. N. BALLENTINE AND E. J. WILKIE, BIRMINGHAM, ALA.

The Mississippi Highway Commission have indicated that several large road contracts with Federal aid attached will be awarded at the next meeting of the Board.

Hannah Construction Company of Hillsboro, Texas were awarded a contract for the completion of Highway 31.

L. C. Rawlinson, Montgomery, Ala., was awarded contract for 10.7 miles of road in Butler County, Ala., at $36,200.00.

Dan LaRoe of Palestine, Texas was recently awarded a contract for clearing, grubbing, graveling and building 21 miles of drainage structure on Highway 21. The contract price was about $217,000.00.

Douglas, Burt & Buchanan Company of Shreveport, La., were awarded a contract for the construction of drainage ditches in 1st. & 2nd. Ward Drainage Districts, Lake Providence, La. This work will involve about 1,000,000 yards of excavation.

Milam County, Texas, awarded contract to Rice & Winder, Austin, Texas for grading and surfacing 22 miles of road in District No. 8. Contract for concrete and wooden drainage structures was awarded to R. Barmore, Cameron, Texas.

Turner, Crox and Maloney, of Chattanooga, Tenn., will construct 11 miles of road in Marion County, Tenn., for the State Highway Department.

Ed Israel, Shovel Engineer, has accepted a position with Carmichael Construction Company, Rock Hill, Kentucky.

The Texas Shope Brick Company has opened an office at 305-6 Sumpter Building, Dallas, Texas. L. G. Strawn is president and general manager and B. K. Howard, Vice-President & Sales Manager.

John W. Ogden, 37 Porter Building, Memphis, Tenn., has a coal stripping proposition in Kentucky which may be of interest to contractors in this line.

Thompson & Donahoo, Tuscaloosa, Ala., have secured a large road contract in this section on Federal Aid Project No. 95, Tuscaloosa County.

Panhandle Brick & Tile Company has been organized at Amarillo, Texas.

C. L. Flournoy, Jasper, Texas, has moved his 30-B Bucyrus shovel near Dallas to handle a stripping contract.

Considerable road construction is in sight in Lincoln Parish, Louisiana.

A. R. Henson is operating a Class-14 Bucyrus dragline for the List and Gifford Construction Co. This

dragline is working in their pit at Kleburg, Texas.

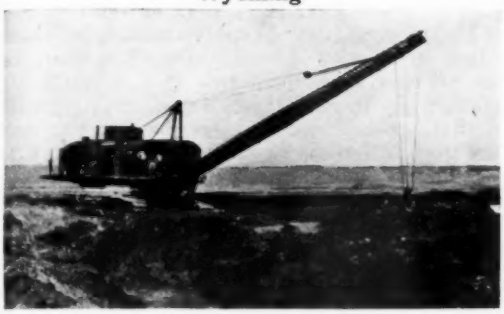
W. K. Larrimore is running a 30-B Bucyrus shovel for C. L. Flournoy & Co., stripping a gravel pit at Dallas, Texas. His address is 410 S. Lamas St., Dallas.

Norris Belser is operating a Class-180 Bucyrus dragline for the Third District, Mississippi River Commission at Millikin, Louisiana.

Virginia

State highway comsn., Geo. P. Coleman, comr., 116 S. 3d st., Richmond, let contr. for road to C. S. Luck & Sons, Richmond, at $101,450.01.

Wyoming



The above photograph shows a Class-9½ Bucyrus gasoline dragline operated by the United States Reclamation Service on the Shoshone Project at Powell, Wyoming by A. F. Bunn of 2401 Norton Avenue, Kansas City, Missouri. Mr. Bunn advises that during the month of June he moved more dirt with this machine than any other dragline on the Project, 25,000 yds. in 24 eight-hour shifts. He states that there are two Class-9½ and two Class-14 Bucyrus gasoline draglines at work on this Project.

The material was mixed, part of the time being gumbo and part sandy soil with some rock in the bottom of the ditch. 400 feet was so muddy and soft that the mud was frequently to the top of the caterpillars. The dragline operated on pontoons.

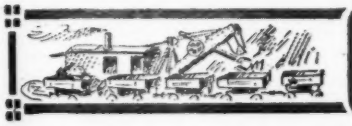
Mr. Bunn claims the distinction of being the lightest man operating a dragline or locomotive crane in the United States as he weighs only 100 pounds. He also was the lightest enlisted man in the United States Army during the last war, weighing 99 pounds when enlisted. He was a member of Company C, 28th Engineers, A. E. F.

Washington

The city of Seattle has let contract for grading East 40th St., et al., involving 900 lin. ft. concrete curbing and 180,000 cu. yd. earth excav., to J. L. Smith, Pioneer Bldg., $27,807. Noted July 21.

Wisconsin

Wisconsin highway comsn., div. office No. 6, Batavia Bank bldg., La Crosse, let contr. for road to Nelson Webber Constr. Co., Oconomowoc, at $128,046.96.



PROSPECTIVE CONSTRUCTION

Alabama

The Alabama Power Co. of Birmingham, has been granted permission to build its proposed hydro-electric generating plant at Duncan's Riffle on the Coosa River, near Verbena, estimated to cost about $7,000,000. About six miles of railroad line will be constructed to reach the site. Thomas W. Martin is president.

Canada

Plans have been completed for construction of a railway from St. Felicien to Chicoutimi, Que., estimated to cost $10,000,000 for the Quebec & Chibougamou Ry. J. F. Grenon, Chicoutimi, Que., is engineer.

Provincial Highway Dept., Parliament Bldgs., Toronto, soon receives bids grading subway under Grand Trunk Ry. tracks at Aurora, Ont., involving 100,000 cu. yd. excav. About $60,000. G. Hogarth, ch. engr.

Georgia

Citizens of Brunswick are considering the construction of a road to St. Simons Island at an estimated cost of $200,000.

Idaho

State Highway Dept., Boise, and Federal Government plan to grade and partly gravel surface 24.12 mi. Forest Rd. from Noble to Montana State Line, 20 ft. wide, Lincoln Co., involving 121,320 cu.yd. earth and 12,495 cu.yd. rock excav., etc. About $109,640. B. J. Finch, c/o U. S. Bureau of Pub. Roads, Ogden, Utah, engr.

Iowa

Mills and Pottawattamie Counties plan to construct joint levee district on Missouri River. About $40,000. W. N. Moore, co. clk.

Marshall Co., plans to straighten and deepen 30 mi. Iowa River, average bottom width 60 ft., depth 14 ft. About $35,000. F. B. Ingersoll, Marshalltown, engr.

Bids will be received until Sept. 15, by Auditor Pottawattamie Co., excavating old ditch channel, Allen Creek D.D., Pottawattamie and Harrison Counties, involving 315,000 cu.yd. excav. About $30,000.

Woodbury Co. plans to build open ditches in Garretson D.D. involving 1,000,000 cu.yd. dry earth excav. About $225,000. C. Moriarity, 518 U. B. Bldg., Sioux City, engr.

Woodbury plans to build open ditches in Grant D.D., involving 60,000 cu.yd. dry earth excav. C. Moriarity, 518 U.B. Bldg., Sioux City, engr.

Minnesota

Freeborn Co. rejected bids opened July 18, building Judicial Ditch 4, involving 1,470,705 cu. yd. excav. and 35,507 lin. ft. 6-22 in. tile. About $263,276. Mid-West Eng. Co., Albert Lea, engrs.

Washington Co. having plans prepared for Judicial Ditches 4, 5 and 6. About $40,000. F. J. Armstrong, 215 Guardian Life Bldg., St. Paul, engr.

Brown, Sibley and Nicollet Counties having plans prepared for three drainage projects, involving 25 mi. open ditches and 223 mi. 6-42 in. tile. About $1,500,000. F. D. Minium, New Ulm, engr.

Mississippi

Abiaca Creek D.D. of LeFlore Co. (Greenwood), Holmes Co. (Lexington), and Carroll Co. (Carrollton), had plans prepared for 4 mi. ditch to drain flood waters of Abiaca Creek into Yazoo River, involving 500,000 cu. yd. dragline excav. Morgan Eng. Co., Goodwyn Institute, Memphis, Tenn., engrs.

Pelucia Drainage Dist. Leflore County Commrs., construct drainage system, reclaiming 14,368 acres of Yazoo Delta land; will issue $99,342 bonds.

Missouri

State Highway Dept., Jefferson City, plans to pave 2.25 mi. state road from Jackson northward, involving

14,674 cu.yd. earth excav., 3,393 cu.yd. borrow, 127.8 cu. yd. Class B and 23.2 cu.yd. Class C concrete masonry, etc., cost $14,499; 5.23 mi. state road from Holland northeast, 25,245 cu.yd. earth excav., 6,643 cu.yd. borrow, 16.7 cu.yd. Class B concrete, $18,513; 4.94 mi. from Bolivar eastward and westward, 25,549 cu.yd. earth excav., 3,242 cu.yd. rock excav., 5,129 cu.yd. borrow, $27,294.

Montana

East Side Irrigation Dist. of Clark Fork Valley, having plans prepared for system to irrigate about 7,000 acres. About $375,000. J. B. Meyers, Belfrey, secy. S. C. Kimball, Red Lodge, engr.

North Carolina

State Highway Comn., Raleigh, plans to clear, grub, grade, drain and surface 17 mi. road from Topton to Almond, State Project 538, Macon and Swain Counties, sand-clay or gravel, about $115,000, 15.3 mi. road from Jones Co. line Jacksonville, State Project 539, Onslow Co., topsoil, $110,000; clear, grub, grade, drain, bridge and surface 21.9 mi. road from Jacksonville to Pender Co. line, State Project 540, Onslow Co., $130,000, 25 mi. road from Sampson Co. line to Castle Hayne, State Project 541, Pender Co., $150,000, 15 mi. road from Westfield to Danbury, State Project 542, Stokes Co., $105,000, C. M. Upham, state highway engr.

Tennessee

The Interstate Railroad will construct a line of 18 miles from Norton, Va., to Benton, on the C. C. & O. Railway, seven miles south of St. Paul. E. B. Wentz, head of the project.

Texas

Wood Co. having plans prepared grading, gravel surfacing and draining 4.43 mi. Highway 15 from Mineola to Smith Co. line, involving 35,337 cu. yd. borrow, 20,000 cu. yd. earth and 416 cu. yd. foundation excav., 453 cu. yd. concrete, 6,821.6 cu. yd. gravel, 33,634 lb. reinforcing steel, etc. About $83,250. J. E. Blair, Mineola, engr.

Bastrop Co., having plans prepared grading, gravel surfacing and building concrete drainage structures on 8.7 mi. Austin-Houston Highway in McDade Rd. Dist., involving 27.66 cu. yd. 1:2:3½, 183.2 cu. yd. 1:2:4, 15.9 cu. yd. 1:2½:5 and 30.4 cu. yd. 1:3:6 concrete, 20,060 cu. yd. earth excav., 16,487 lb. reinforcing steel and 10,030.5 cu. yd. gravel. About $42,690. D. M. Puckett, Elgin, engr.

Comanche Co. having plans prepared grading, gravel surfacing, draining and building bridges on 17.4 mi. State Highway 18, involving 18,330 cu. yd. borrow and 1,086 cu. yd. structural excav., 3,026 cu. yd. 1:2:4 and 486 cu. yd. 1:2½:5 concrete, 92,200 lb. structural and 257,434 lb. reinforcing steel, 36,350 cu. yd. gravel surfacing, etc. About $229,000 L. D. Parks, De Leon, co. engr.

Utah

Price River Irrigation Dist. plans to reconstruct Mammoth Dam, also excavate new ditches and clean old canals. About $250,000. W. W. Jones, Price, engr. McGonagle & Ulrich, Salt Lake City, consulting engrs.

TRADE NOTES

CHANGE IN BUCYRUS FOREIGN SALES ORGANIZATION

Announcement has been made of the fact that the branch office of the Bucyrus Company in London at Iddesleigh House, Suite 19, Caxton Street, Westminster, should be addressed for all inquiries from the British Isles, owing to the fact that Messrs. Geo. F. West & Company are no longer Bucyrus Agents for that territory. Inquiries for machinery for use in countries in which Bucyrus agencies are maintained, should be addressed to the agents, a list of which will be found on the last page of this magazine.

Have Prices of Construction Material Reached the Bottom?

(Continued from page 303)

tracts awarded were 6% behind the January five-year average and for the period of January to July first they were 9½% ahead of the January to July first five-year average. As we all know, there is not very much industrial construction going on, the greater part being residential.

When the large volume of this class of work starts, however, the increased demand will undoubtedly have a tendency to push building costs up, for the same laws of supply and demand obtain in the construction industry as in other lines, and it is not reasonable to suppose that in the face of such activity there will be an appreciably greater deflation. Consequently, there does appear to be some ground for the slogan adopted by many Associations of Commerce to "Build Now."

Railroads now seem to be practically assured of Government aid and accordingly it is reasonable to suppose that they will soon be in the market for the equipment and the materials they have so long needed. This has been predicted for so long that it is hard to realize that the time is soon to be at hand. It is very evident, however, that heavy railroad purchases will act as a strong tonic to the business situation in general.

It does not seem out of place to call the attention of our readers to a warning which Secretary of Commerce Hoover has addressed to various Public Utility organizations. He has pointed out that there has been an undue slackness in the purchase of bituminous coal during the present business depression, and prices thereof at the mines are not too high at the present time. In fact, this seems to be proven by the fact that a large number of operating companies appear to be making no profit whatever.

Mr. Hoover goes on to state that if there should be a recovery of business activities in the autumn, taken in conjunction with the large increase in percentage of disabled cars (which has been from 5 to 16% during the past six months) there are possibilities of the development of a most serious situation in regard to the coal movement. For this reason the Interstate Commerce Commission has repeatedly warned the public and particularly the Public Utilities Companies to make early provision for stocks of coal sufficient to carry them over the critical period.

Severely Damaged

The amateur huntsman sighted along the barrel at a distant bird and pulled the trigger. There was a roar and he ran forward, to find nothing but a placid tree toad hopping about his business.

"Not so bad, not so bad," mused the hunter complacently. "I didn't kill him but I certainly knocked all the feathers off him." —*The American Legion Weekly.*

One year's supply of coal for New York, loaded in fifty-ton cars, would make a train reaching from that city to Salt Lake City. —*St. Louis Globe-Democrat.*

AND GET MORE WORK IN LESS TIME

A superheater is *a steam shovel stimulant*. You can easily tell the difference between a superheated and non-superheated shovel. The first has snap, power, pep, speed. It jumps to the levers, works fast, kicks into the digging, always has all the steam needed and a reserve for sudden overloads. The superheated steam shovel gets the same amount of work done in say 20% of the time, or 20% more work in the same time. The superheated shovel enables a contractor to cut down his time and money, estimates, beginning at the beginning—to cut the bid on the entire contract. Do you know how simple they are, how easily installed, and that they don't complicate operation? Write today. Send for bulletins WT-3 and WT-4 and then cut your bid on the next contract.

THE SUPERHEATER COMPANY

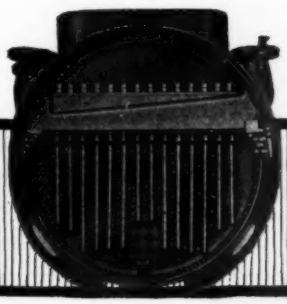
Formerly: Locomotive Superheater Co.

General Offices: 17 E. 42nd Street, New York

Chicago: People's Gas Bldg. **Pittsburgh: Union Arcade Bldg.**

For Canada: The Superheater Co., Ltd., Transportation Bldg., Montreal

Designing Engineers and Manufacturers of ELESCO Steam Superheaters and Pipe Coils for all Purposes. Feed Water Heating Equipment for Locomotive Service. Boiler Feed Pumps for all Services.



ELESCO

Superheater—a STIMULANT for Steam Shovels!

For convenience in making inquiry use postal inserted in this number.

A Modern and Well-Equipped Gravel Plant

(Continued from page 297)

storage yards at 3690 Milwaukee Avenue, Chicago where the main offices of the Wilcox Company are located.

We are indebted to Mr. F. C. Simmonds, Superintendent of the Lake Geneva Plant for the above information.

The Retort Courteous

Courtesy and tact are essential in every business relation, and even if rebuffed a gentle answer is the better way—not as related of the old gentleman who neglected to assist his wife into the automobile.

"You are not so gallant, John, as when I was a gal," she exclaimed in gentle rebuke.

"Perhaps not," was his mild response, "and you are not so buoyant as when I was a boy." —*Exchange*

Two men who had been old school-fellows met the other day in a restaurant. After exchanging greetings, one said:

"By the way, old chap, when at school you used to be rather fond of music. Do you play any instrument now?"

"Yes," was the reply, "second fiddle at home."

—*Pearson's Weekly.*

Lap and Lead

A master mechanic called in Pat, a locomotive engineer, and was questioning him in reference to his general knowledge of mechanics. "What do you know about Lap and Lead?" "Sure," says Pat, "all I know is to Lead her out of the round house and Lap hell out of her on the road."

HOISTING CHAINS FOR STEAM SHOVELS

"HERCULES SOLID WELD" STEAM SHOVEL CHAINS

Highest Grade Manufactured

Always in stock Wire your order.

THE COLUMBUS McKINNON CHAIN CO.
General Offices
COLUMBUS, - OHIO

"The Moon Turbine Generator Has Never Given Us a Moment's Trouble."

The Union Coal Stripping & Mining Co.
LAFFERTY, OHIO

To the Moon Mfg. Co.
Chicago, Ill.
Gentlemen:

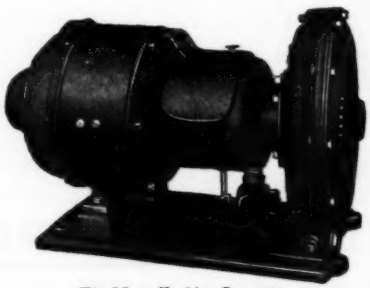
Over one year ago we installed one of your turbine generators of which we are very proud. It has run for 6 twelve hour runs every night on a 2 1/2 B Bucyrus shovel and has never given a moment's trouble except exchange of brushes once.

Yours Truly
C. R. Summers

Moon Electric Lighting Plants

Have Been Giving Satisfactory Service for Years Under All Conditions

They Will Do the Same for You



The Moon Turbine Generator

Is Simple, Compact, Durable
Its Steam Consumption is Negligible
Automatic in Regulation Under all Load Conditions

It Will Solve Your Lighting Problems

Tell Us What You Want to Light and Our Construction Lighting Department Will Be Glad to Assist You

Write Today for Our Catalog 4-A

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The Moon Manufacturing Co.

Lights for Steam Shovels, Draglines and Dredges
108 North Jefferson St. Chicago, Ill.
Lighting Specialists for the Construction Industry